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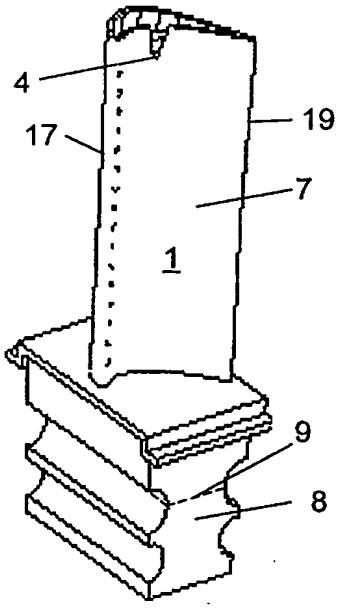

FIG. 1A

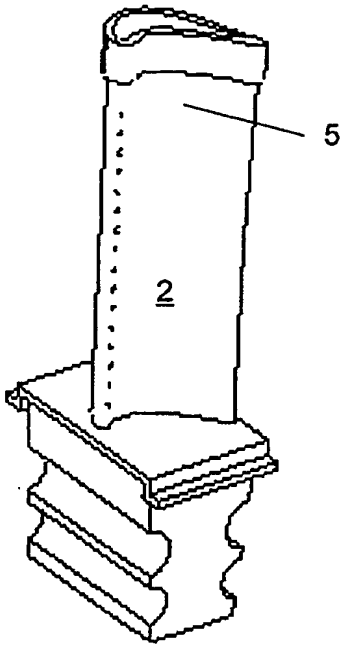

FIG. 1B

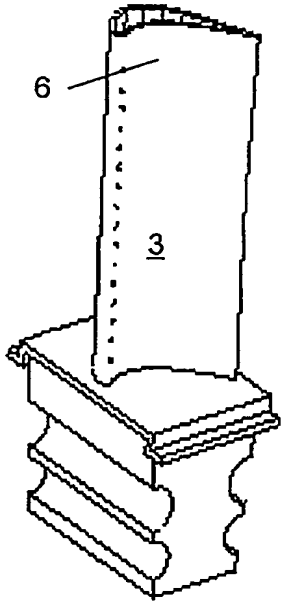

FIG. 1C

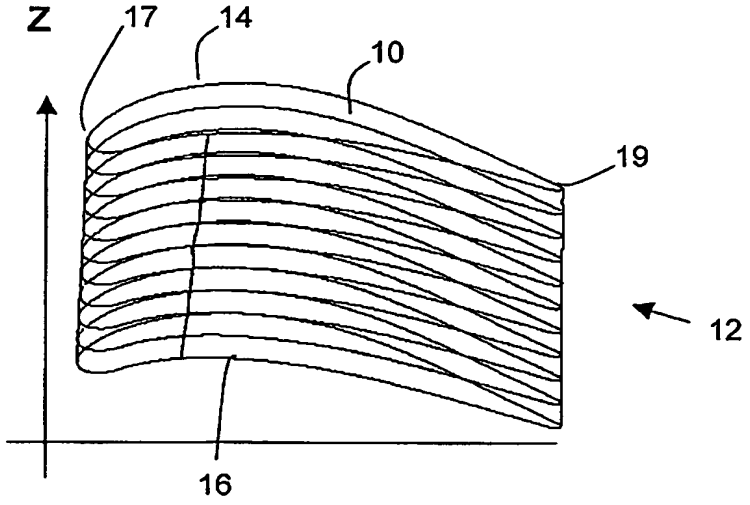

FIG. 3

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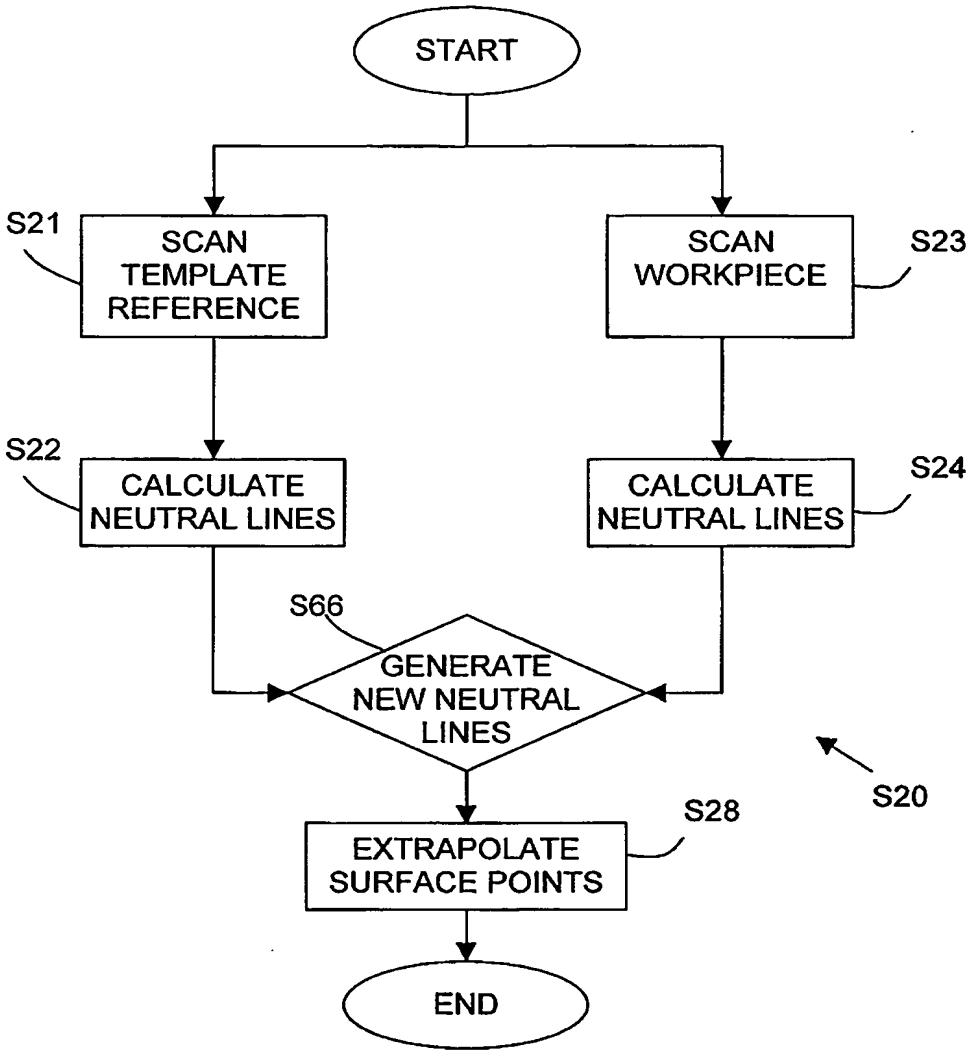
START
S21
SCAN TEMPLATE REFERENCE
S23
SCAN WORKPIECE
S22
CALCULATE NEUTRAL LINES
S24
CALCULATE NEUTRAL LINES
S66
GENERATE NEW NEUTRAL LINES
S20
S28
EXTRAPOLATE SURFACE POINTS
END

FIG. 2

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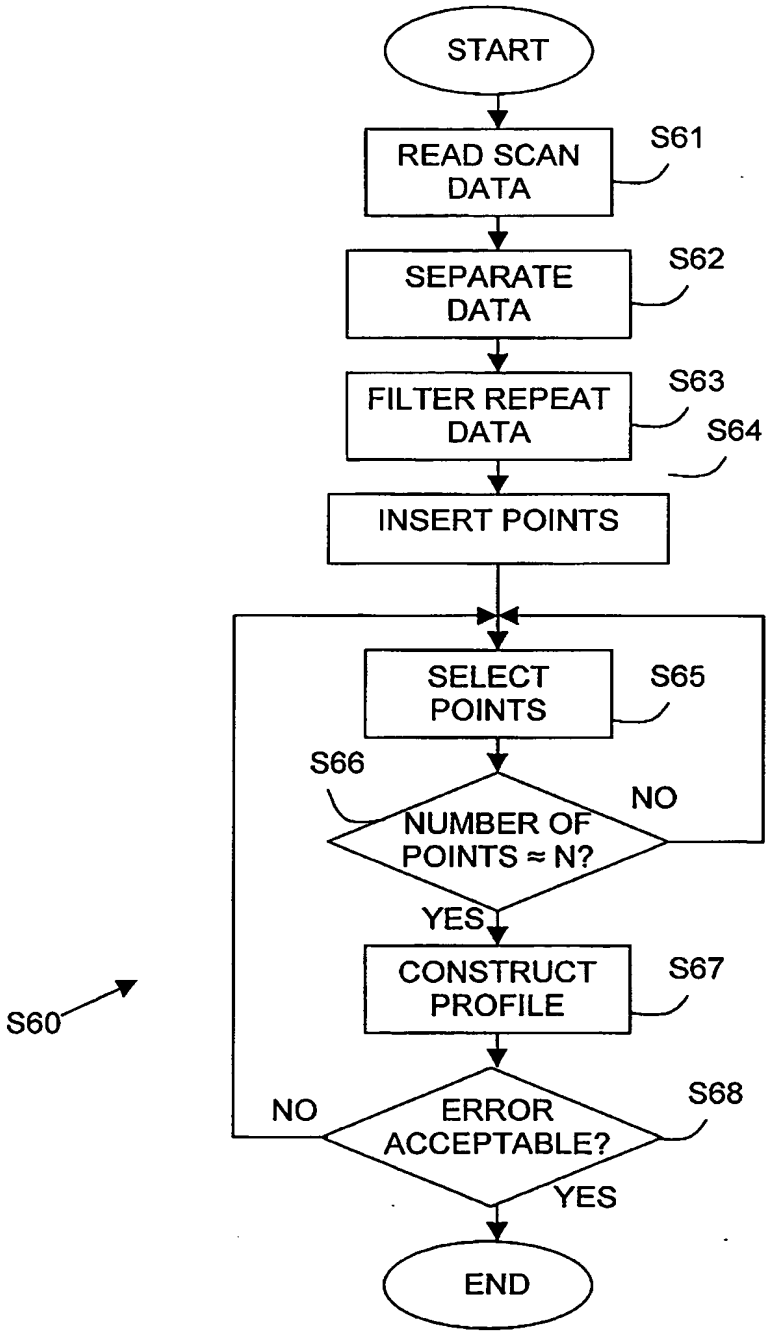

START
READ SCAN DATA
S61
SEPARATE DATA
S62
FILTER REPEAT DATA
S63
S64
INSERT POINTS
SELECT POINTS
S65
S66
NUMBER OF POINTS ≈ N?
NO
YES
CONSTRUCT PROFILE
S67
S60
ERROR ACCEPTABLE?
S68
NO
YES
END

FIG. 4

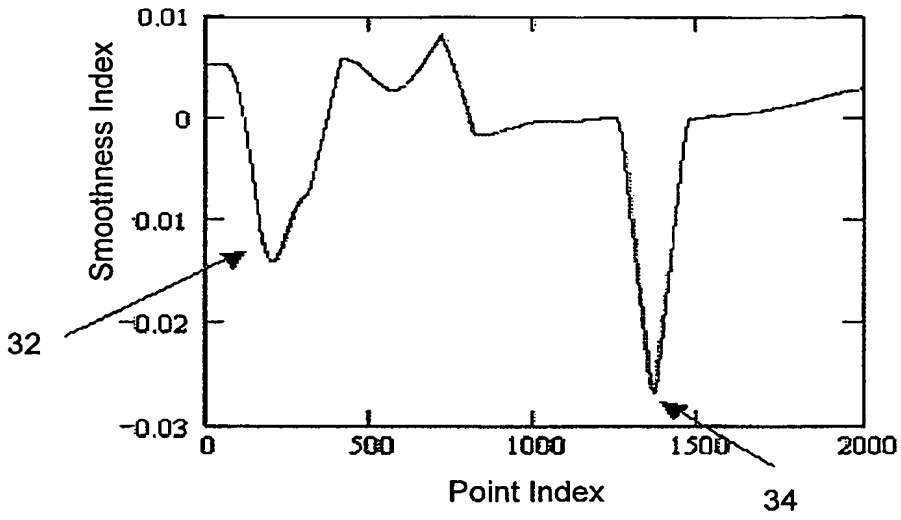

Smoothness Index
0.01
0
-0.01
-0.02
-0.03
0
500
1000
1500
2000
Point Index
32
34

FIG. 5

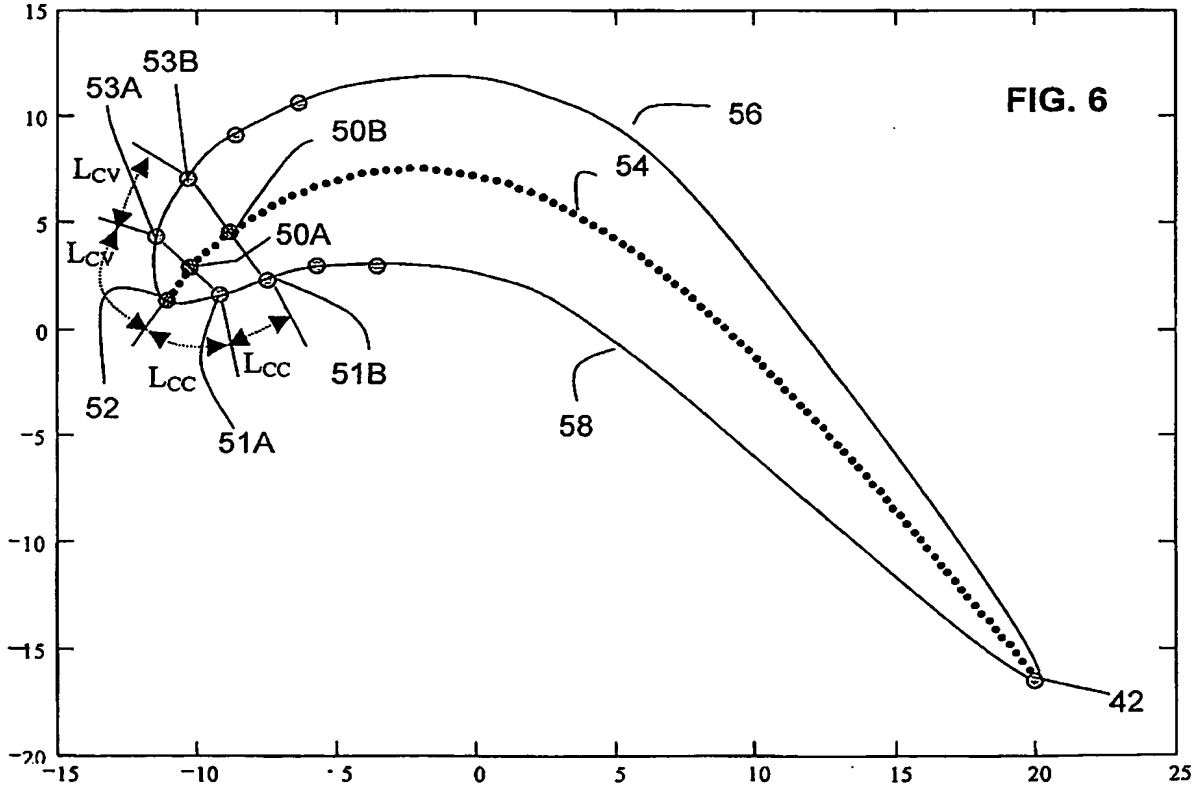
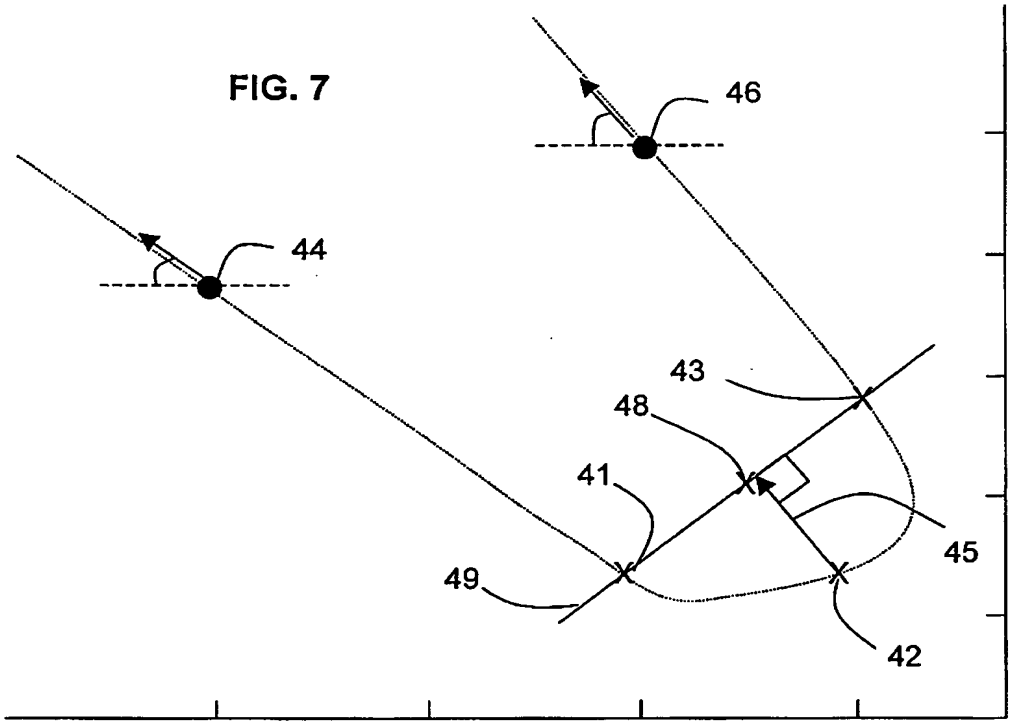

15
10
5
0
-5
-10
-15
-20
-15
-10
-5
0
5
10
15
20
25
53B
53A
50B
56
54
Lcv
Lcv
50A
Lcc
Lcc
51B
52
51A
58
42

FIG. 6

FIG. 7



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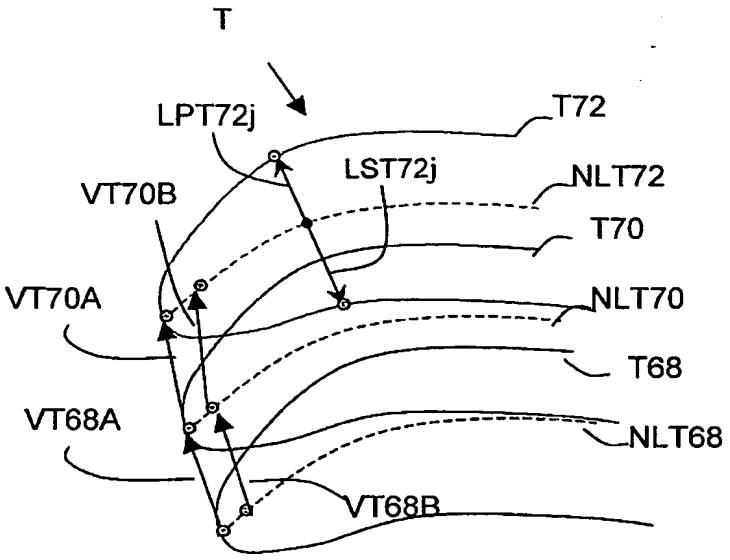

FIG. 8A

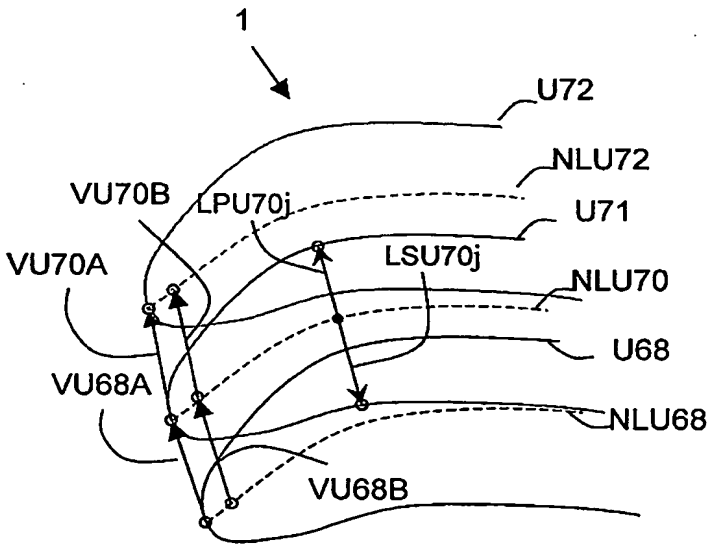

FIG. 8B

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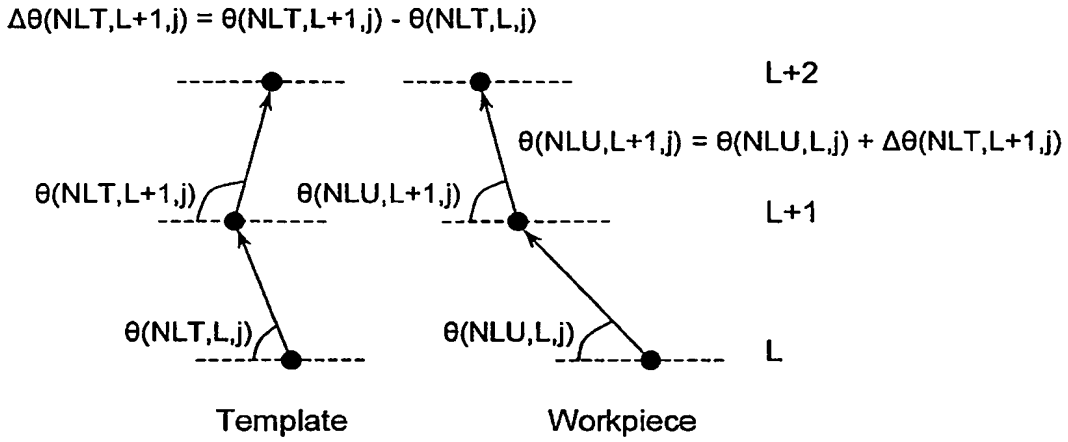

FIG. 9

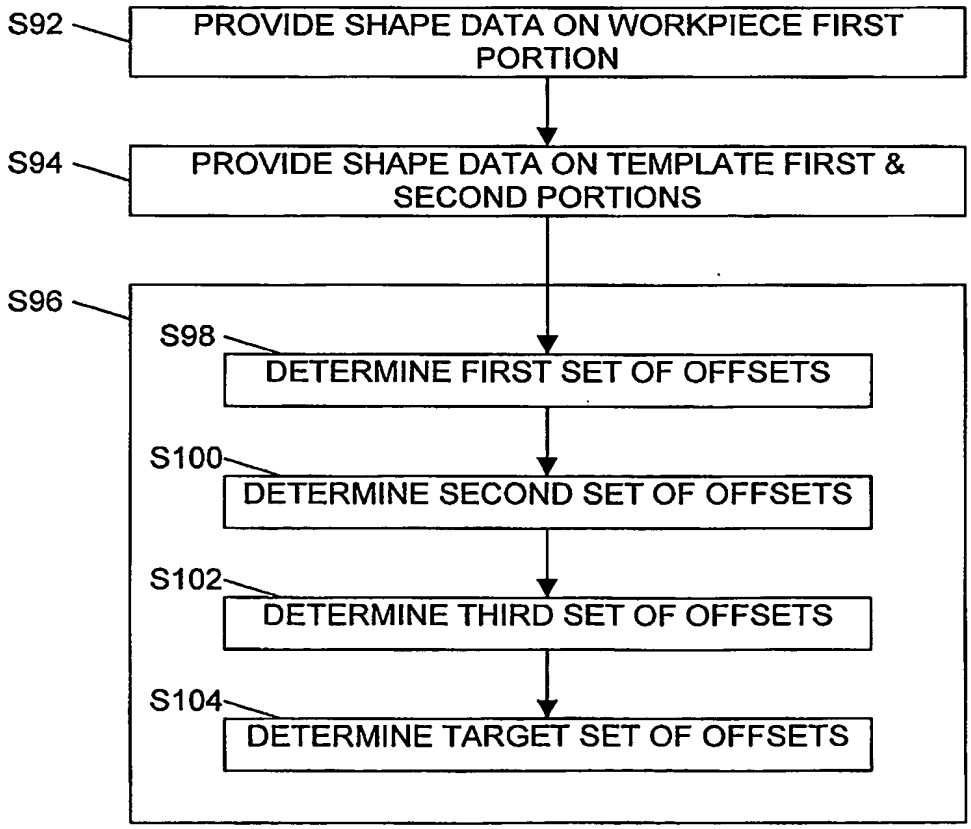

FIG. 10

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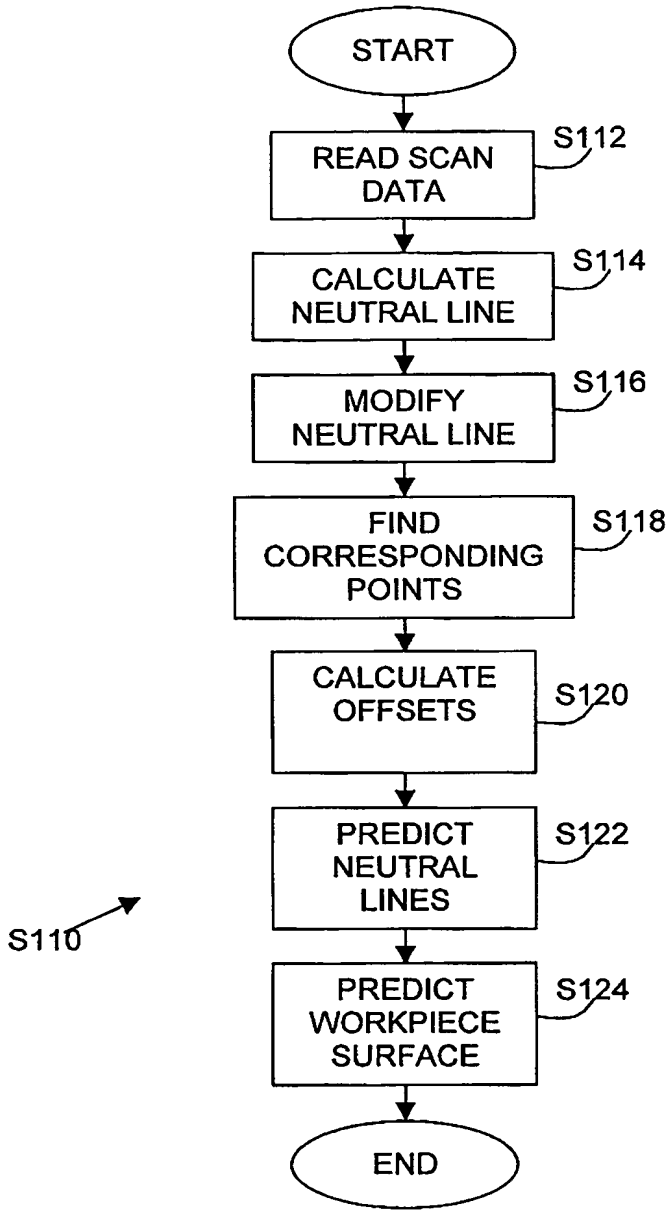
START
READ SCAN DATA
S112
CALCULATE NEUTRAL LINE
S114
MODIFY NEUTRAL LINE
S116
FIND CORRESPONDING POINTS
S118
CALCULATE OFFSETS
S120
PREDICT NEUTRAL LINES
S122
PREDICT WORKPIECE SURFACE
S124
END
S110

FIG. 12

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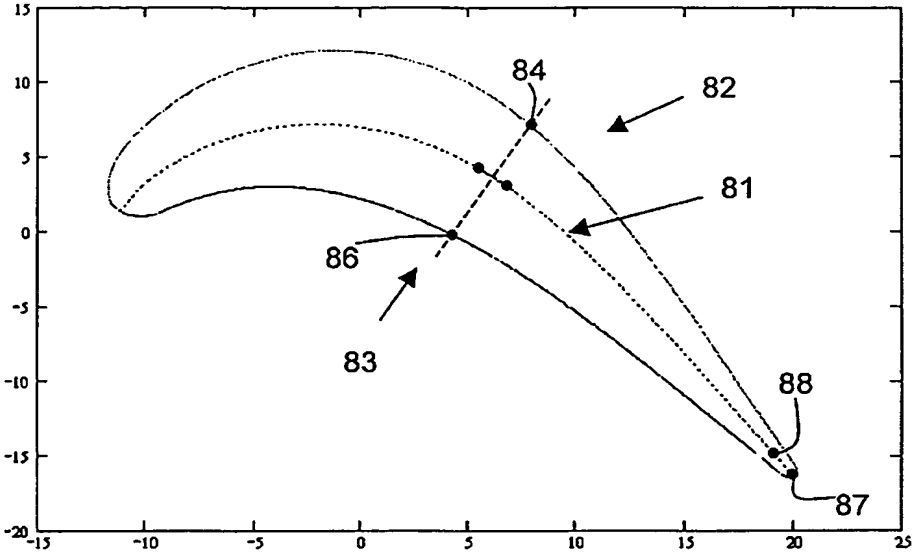

Fig. 11

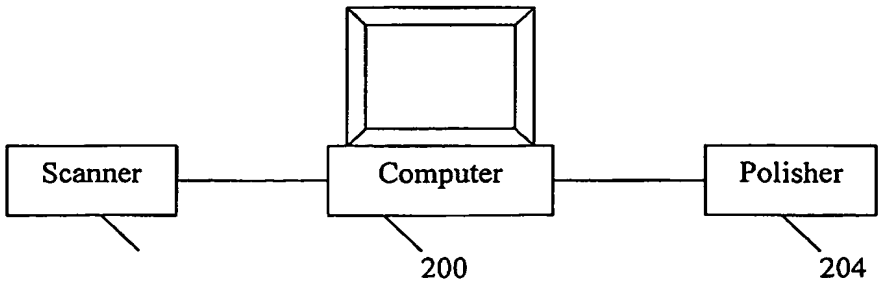

FIG. 13